IN THE CLAIMS:

1.-5. (Cancelled)

6. (Currently amended) A catalyst-deterioration diagnostic ~~system~~ apparatus for diagnosing a deterioration state of a catalyst, comprising:

index means for obtaining a value of an index which is used for deciding the deterioration state of the catalyst;

catalyst state estimation means for estimating a state of said catalyst at a time at which said index means has obtained the index value, as to a physical quantity which affects a catalytic action of said catalyst;

correction means for correcting said index value obtained by said index means, to a value in a standard state of said catalyst previously set as to the physical quantity, by the use of the estimated result of said catalyst state estimation means; and

decision means endowed with a preset criterion value, and for deciding said deterioration state of said catalyst by comparing the index value corrected by said correction means, with the criterion value, wherein:

said catalyst serves to eliminate noxious substances which are contained in exhaust gas of an engine; and

said catalyst state estimation means includes

operating-situation detection means for detecting a value of that state variable of the engine which correlates with said physical quantity;

memory means for storing therein correspondence information which indicate correlations between values of the state variable and those of said physical quantity; and

arithmetic means for determining a value of said physical quantity by referring to the correspondence information on the basis of the detected result of said operating-situation detection means.

7. (Amended) A catalyst-deterioration diagnostic ~~system~~ apparatus for diagnosing a deterioration state of a catalyst, comprising:

index means for obtaining a value of an index which is used for deciding the deterioration state of the catalyst;

decision means endowed with a preset criterion value, and for deciding said deterioration state of said catalyst by comparing the index value obtained by said index means, with the criterion value;

catalyst state estimation means for estimating a state of said catalyst at a time at which said index means has obtained said index value, as to a physical quantity which affects a catalytic action of said catalyst; and

suspension means endowed with a predetermined range concerning the physical quantity, and for causing said decision means to suspend the decision on condition that a value of said physical quantity obtained by said catalyst state estimation means is outside the predetermined range, wherein:

said catalyst serves to eliminate noxious substances which are contained in exhaust gas of an engine; and

said catalyst state estimation means includes

operating-situation detection means for detecting a value of that state variable of the engine which correlates with said physical quantity;

memory means for storing therein correspondence information which indicate correlations between values of the state variable and those of said physical quantity; and

arithmetic means for determining a value of said physical quantity by referring to the correspondence information on the basis of the detected result of said operating-situation detection means.

8.-16. (Cancelled)

17. (Currently amended) A diagnostic ~~system~~ apparatus for diagnosing a deterioration state of a catalyst in an engine, comprising:

a memory for storing a preset criterion value and a predetermined range for a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst; and

a processor operatively connected to the memory for obtaining an index value indicative of a conversion efficiency of the catalyst [;] , receiving a value of the state variable of the engine [;] , suspending a determination of the deterioration state of the catalyst if the value of the state variable is outside the predetermined range [;] , and determining the deterioration state of the catalyst by comparing the index value with the preset criterion value if the value of the state variable is within the predetermined range.

18. (Currently amended) The diagnostic ~~system~~ apparatus of claim 17, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions-per-minute of the engine.

19. (Currently amended) The diagnostic ~~system~~ apparatus of claim 17, wherein the preset criterion value represents a limit of deterioration calling for replacement of the catalyst.

20. (Currently amended) A diagnostic ~~system~~ apparatus for diagnosing a deterioration state of a catalyst in an engine, comprising:

a memory for storing a preset criterion value; and

a processor connected to the memory for obtaining an index value indicative of a conversion efficiency of the catalyst; receiving a value of a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst; modifying the index value to a value in a standard state of the catalyst previously set as to the physical quantity using the value of the state variable; and determining the deterioration state of the catalyst by comparing the modified index value with the preset criterion value.

21. (Currently amended) The diagnostic ~~system~~ apparatus of claim 20, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions-per-minute of the engine.

22. (Currently amended) The diagnostic ~~system~~ apparatus of claim 20, wherein the preset criterion value represents a limit of deterioration calling for replacement of the catalyst.

23. (Previously presented) A method of diagnosing a deterioration state of a catalyst in an engine, comprising:

(a) storing a preset criterion value and a predetermined range for a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst;

(b) obtaining an index value indicative of a conversion efficiency of the catalyst;

(c) detecting a value of the state variable of the engine;

(d) suspending a determination of the deterioration state of the catalyst if the value of the state variable is outside the predetermined range; and

(e) determining the deterioration state of the catalyst by comparing the index value with the preset criterion value if the value of the state variable is within the predetermined range.

24. (Previously added) The method of claim 23, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions-per-minute of the engine.

25. (Previously added) The method of claim 23, wherein the present criterion value represents a limit of deterioration calling for replacement of the catalyst.

26. (Previously added) A method of diagnosing a deterioration state of a catalyst in an engine, comprising:

(a) storing a preset criterion value;

(b) obtaining an index value indicative of a conversion efficiency of the catalyst;

(c) detecting a value of a state variable of the engine that correlates with a physical quantity affecting a catalytic action of the catalyst;

(d) modifying the index value to a value in a standard state of the catalyst previously set as to the physical quantity using the value of the state variable; and

(e) determining the deterioration state of the catalyst by comparing the modified index value with the preset criterion value.

27. (Previously added) The method of claim 26, wherein the physical quantity is a temperature of the catalyst and the state variable is selected from the group consisting of a quantity of intake air, a quantity of fuel injection, and a revolutions per minute of the engine.

28. (Previously added) The method of claim 26, wherein the present criterion value represents a limit of deterioration calling for replacement of the catalyst.

29. (New) The method of claim 23, wherein steps (d) and (e) are carried out by using a processor which obtains the index value and the state variable from a memory which stores a predetermined range for the state variable.

30. (New) The method of claim 26, wherein steps (d) and (e) are carried out by using a processor which obtains the index value and the state variable from a memory which stores a predetermined range for the state variable.